# FIELD AND HERBARIUM STUDIES, IV[1]

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**Picea pungens** (Parry) Engelm., Gard. Chron. N. S. **11:** 334. 1879.

During the past three preceding summers occasion was had to study the distribution of the Blue Spruce in Wyoming, of which there is probably a great deal more than is generally realized.

It extends, so far as was observed, along the Snake River, from Jackson Lake, in Teton County, at least to the Gorge of the river in Lincoln County, as well as up all of the tributary creeks and rivers. Along the Snake River, some fifty miles, it is the predominant conifer and is exceedingly abundant, but along the tributaries which usually gain elevation rather rapidly it is of less importance. In Sublette County it was found around Fremont Lake, Half Moon Lake, and other of the lakes in that vicinity. It is also to be found along the Green River but there it is not common. It does not ascend the river as far as the Green River Lakes; whether or not it goes farther down the river than a point due west of Pinedale is not known. The tree is also to be found, in this county, along the Hoback River which is a tributary of the Snake River. In Fremont County it was first observed near Dubois on the Wind River and extends up that river from there for several miles, and is also on some of the tributary streams. How generally it is distributed along the other creeks or how far it may extend down the east side of the Wind River Mountains remains to be investigated.

Acquaintance with the tree in Colorado does not quite give one an adequate idea of the species as it occurs in northwestern Wyoming. At first sight it may not be realized that it is the Blue Spruce. It is almost entirely lacking in any "blue cast." Again it is to be found only along the streams or at most no great distance from the water. The size attained is much

[1] Issued September 1, 1936.

greater than any the author has seen in Colorado. Trees four to five feet in diameter at shoulder height are not uncommon; one measured just under six feet in diameter. The height is in proportion.

The altitudinal limits seem to be rather definite. It is rarely found above 7500 feet altitude and so far as observed not below about 5700 feet. The best development is between 6000-7000 feet in Teton County. In this region the Blue Spruce is often associated with the Engelmann Spruce (*Picea Engelmannii* Parry). One tree, in such an association, observed above Dubois had cones which seemed to be intermediate both in size and in shape of the cone scales between the two species, but inclining slightly more toward those of the Blue Spruce. Cones observed from a tree on the grounds of the Lee Ranger Station, near Wilson, showed a large range of variation, particularly in shape of the cone scales but cones were not so small as on the tree near Dubois.

**Salix Tweedyi** (Bebb) Ball, Bot. Gaz. **40**: 377. 1905.

This willow was found in abundance along Cascade Creek, one of the cold glacial streams in Grand Teton National Park. During the past summer it was found again in the Big Horn Mountains of Wyoming where the original collection was made. From Dr. Carleton R. Ball, who has kindly determined the material, comes the information that sets of this species have not been distributed among herbaria. My numbers 1133, 1668, and 1686 show it in various stages of development.

Specimens were collected in a spruce bog near Bald Mountain, elev. 9500 ft., Big Horn Co., Aug. 29, 1935, *Williams 2511.*

**Salix cascadensis** Ckll., Muhlenbergia **3**: 9. 1907.

This plant is quite common in Grand Teton National Park, between 9500 and 11,000 feet altitude, where it covers acres of ground. My numbers 915 and 1352, determined by Dr. Ball, illustrate it.

**Salix arctica** Pallas, Fl. Ross. I. **2**: 86. 1784–1788.

This species is not mentioned in Rydberg's 'Flora of the Rocky Mountains and Adjacent Plains' or in the Coulter and

Nelson 'Manual of Rocky Mountain Botany.' It is found occasionally in Grand Teton National Park. My number 1708, determined by Dr. Ball, represents it.

**Populus taccamahacca** Miller, Gard. Dict. ed. 8. Populus No. 6. 1768.

Both the broad- and narrow-leaved forms are found in Teton County, Wyoming. The narrow-leaved form occurs along the streams in the valley. The broad-leaved form, which Dr. Alfred Rehder has kindly determined and which he informs me was not previously in the collection of the Arnold Arboretum from Wyoming, is to be found in the canyons of the Teton range.

**Xerophyllum tenax** (Pursh) Nutt., Gen. 1: 235. 1818.

This genus seems not to have been reported from the state of Wyoming. Two specimens are at hand, both sent to the author for determination and both from Teton County (slope north of Jackson Lake, July 11, 1932, *W. B. Sheppard;* four miles west of Cascade Creek on the road to Ashton, Idaho, along Reclamation Road, June 25, 1934, *Mrs. J. W. Orlob 1633b*).

Professor Nelson, in Coulter and Nelson's 'Manual of Rocky Mountain Botany,' p. 118. 1909, states the range as: "Montana, possibly Wyoming, and west to Oregon." In a letter he informs me that there are no specimens in the Rocky Mountain Herbarium collected in Wyoming.

**Paeonia Brownii** Dougl. in Hook., Fl. Bor. Am. 1: 27. 1829.

The published floras covering the Rocky Mountain region do not give this genus as occurring in Wyoming, yet several specimens from the northwestern part of the state have been in existence since 1860. More recently several collections have been made from the same area, of which the following may be cited: Jackson's Hole, on Snake River, June 18, 1860, *F. V. Hayden;* on Henry's Fork, June 19, 1860, *F. V. Hayden;* Lake Fork, June 22, 1860, *F. V. Hayden;* gravel flats, Jackson's Hole, Aug. 3, 1920, *Payson & Payson 2169;* near Jenny Lake, Grand Teton National Park, 1931, *Mrs. A. C. Lyon;* gravel flats near Jenny Lake, Sept. 2, 1933, *Williams 1434.*

The Hayden specimens were sent to Dr. Engelmann for determination but were not included in the published list of the plants of that expedition. They bear no annotations by Dr. Engelmann.

**Aquilegia Jonesii** Parry, Am. Nat. **8**: 211. 1874.

This rare columbine was found again in the Big Horn Mountains. It seems to inhabit only the calcareous rock slides. My number 2358, July 5, 1935, represents it.

Roots and seeds were sent to the Cheyenne Horticultural Field Station at Cheyenne. It will be of interest to see if it survives in cultivation.

**Ranunculus jovis** A. Nels., Bull. Torr. Bot. Club **27**: 261. 1900.

While the rocky flats of Grand Teton National Park were in most places still covered with two feet of snow and the temperature was below the freezing point each night this little plant was thriving. Indeed it had nearly matured its seed before the snow was gone from the flats. It is of interest to find this at an elevation as low as 7000 feet, since it is usually to be found in the alpine regions. (*Williams & Pierson 1074*, April 24, 1933, distributed as *R. glaberrimus* Hook.?).

**Thermopsis rhombifolia** (Nutt.) Rich., var. **annulocarpa** (A. Nels.), comb. nov.

*T. annulocarpa* A. Nels., Bull. Torr. Bot. Club **26**: 239. 1899.

Professor Nelson in Coulter and Nelson's, 'Manual of Rocky Mountain Botany,' p. 271. 1909, referred this to *T. rhombifolia* as a synonym. However, it seems to merit varietal rank even though the characters by which it is distinguished are superficial. There seems to be another closely related variety of the species occurring on the western border of the range. Whether it represents an undescribed variety or is *T. arenosa* A. Nels. will have to await a study of the type of that species.

**Dalea Grayi** (Vail), comb. nov.

*D. laevigata* Gray, Pl. Wright. **2**: 38. 1853, non Sesse & Moc. 1832.

*Parosela Grayi* Vail, Bull. Torr. Bot. Club **24**: 14. 1897.

*Thornbera Grayi* Rydb., N. Am. Fl. **24**: 119. 1920.

**Dalea Thompsonae** (Vail), comb. nov.

*Parosela Thompsonae* Vail, Bull. Torr. Bot. Club **24**: 18. 1897.

Among a fine collection of plants received from Mr. Bertrand Harrison for determination is a specimen which seems, *ex char.*, to be referable to this species. If the determination is correct it represents a considerable extension of range. The specimen bears the following data: dry sandy wash, excessively alkaline soil, Henry Mountains, Vanadium Mine, Garfield Co., Utah, May 20, 1934, *Harrison 7520*.

**Hoffmanseggia tenella** B. C. Tharp & L. O. Williams, n. sp.[2]

Slender perennial herb, 8–15 cm. tall; stem proper short, unbranched or nearly so, terminated by a few-flowered simple raceme; leaves bipinnate with 3–7 pinnae, as long as or exceeding the inflorescence, sparingly soft-pubescent, the petioles 5–13 cm. long; the pinnae with 5–6 pairs of pinnules, the pinnules sessile on the rachis or nearly so, 2–4 mm. long, 1–2 mm. broad, oblique, glabrous on the upper surface, sparingly pubescent on the lower surface and margins; stipules small, scarious, 1–2 mm. long, adnate to the petiole; inflorescence not exceeding the leaves, usually 3–5-flowered, each pedicel subtended by a short scarious bract; calyx about 4 mm. long, the lobes linear-oblong, obtuse, slightly naviculate, finely but densely pubescent; petals obovate, attenuated into a very short claw, 3–4 mm. long, 1.5–2 mm. wide; filaments free, with a few short hairs; mature legume 12–15 mm. long, 4–6 mm. wide, straight, finely and rather densely pubescent but not glandular; seeds 2–4.

TEXAS: Robstown to Alice, Nueces Co., Nov. 22, 1931, *Mrs. F. E. Clements 128b* (Herb. Univ. Texas, TYPE; fragment and photograph of type in Herb. Mo. Bot. Gard.).

This species seems to have its nearest ally in *H. drepanocarpa* Gray, from which it differs in several aspects. The

[2] **Hoffmanseggia tenella** B. C. Tharp & L. O. Williams, n. sp., herba perennis gracilis, 8–15 cm. alta, simplice aut sparse ramosa; inflorescentiis paucifloris terminalibus; foliis bipinnatis, 3–7 pinnis, pubescentibus vel fere glabris, 5–6 paribus foliolarum; stipulis parvis, 1–2 mm. longis; calyce fere 4 mm. longo, pubescente, lobis lineari-oblongis; petalis obovatis, 3–4 mm. longis, 1.5–2 mm. latis; legumine 12–15 mm. longo, 4–6 mm. lato, recto, pubescente, sine glandulis.

leaves of the latter have 7–11 pinnae, those of ours have 3–7. In *H. drepanocarpa* the inflorescence usually exceeds the leaves and has several flowers, while in our plant it rarely if ever exceeds the leaves and the flowers are fewer. The legume of that species is 25–40 mm. long and is strongly falcate, while that of ours is about half or less that length and straight. Our plant is noticeably more slender than *H. drepanocarpa* and has fewer stems to the root.

**Dryas Drummondii** Richards., var. **tomentosa** (Farr), comb. nov.

*D. tomentosa* Farr, Ottawa Nat. **20**: 110. 1906.

That this can be maintained as a distinct species on its rather meagre characters is doubtful. Juzepczuk, in Bull. Jard. Bot. URSS. **28**: 311. 1929, places it in a new section, Nothodryas, of *Dryas*, along with *D. Drummondii* Richards. and *D. grandis* Juz. With the former, at least, it is closely related, but the latter has not been seen.

It is of interest to note that Juzepczuk, *l.c.* p. 325, describes a new species, *D. Hookerianum* from Rocky Mountain material. The writer is unable to find specific or even varietal differences between available material, which he cites, and European material of *D. octopetala* L.

**Zauschneria Garrettii** A. Nels., Proc. Biol. Soc. Wash. **20**: 36. 1907.

*Z. latifolia* var. *Garrettii* Hilend, Am. Jour. Bot. **16**: 66. 1929.

Finding this species above Bradley Lake in Grand Teton National Park came as a distinct surprise to the author. However, on looking up the distribution of the species several collections were found which were out of the range, "in mountains of Utah and southern Wyoming," given by Miss Hilend in her revision of the genus. The only specimen cited for Wyoming in that revision is from west-central, not southern, Wyoming. The following specimens may be cited:

WYOMING: hills east of Afton, Aug. 8, 1923, *Payson & Armstrong 3771;* ledges above Bradley Lake, Grand Teton National Park, Aug. 14, 1933, *Williams 1403;* mountains west of Cody,

Park Co., July, 1905, *Worthley;* mountain top, Holm Lodge, about 40 miles west of Cody, Aug. 26, 1922, *von Schrenk.*

**Rhododendron Warrenii** Macbr., Contr. Gray Herb. N. S. No. 56, p. 55. 1918.

*Azaleastrum Warrenii* A. Nels., Bot. Gaz. **56**: 67. 1913.

A consideration of the type and two subsequent collections of this species from Colorado, contained in the Rocky Mountain Herbarium and kindly loaned the author for study, raises a question concerning the taxonomic status of the species.

The collection on which the species is based is rather meagre; however, the description given for it is accurate. It compares very favorably with the abundant material at hand of *R. albiflorum* Hook., Fl. Bor. Am. **2**: 43. 1834 (*Azaleastrum albiflorum* Rydb., Mem. N. Y. Bot. Gard. **1**: 297. 1900), from the northwest in a similar stage of development.

An excellent collection, mountains due west of Walden, July 20, 1930, *Leonard Johnson,* from the same region, perhaps type locality, leaves little doubt that the plants are the same as those from the Northwest. The several hundred miles between the Colorado station and the nearest known station in Montana raises an interesting question in distribution.

Dr. Rydberg gave the distribution and range of *Azaleastrum Warrenii,* in the 'Fl. Ry. Mts. and Adj. Plains,' p. 640. 1917, as "Mountain slopes: Colorado." However, so far as it is known, it seems to occur only at the station at which it was first collected and near by, not nearly as widely distributed as Dr. Rydberg's note would indicate. The three specimens in the Rocky Mountain Herbarium are all from Jackson County.

**Nemophila petrophila** n. sp.[3]

Low annual, 4–13 cm. tall; cotyledonary leaves persistent, opposite, obovate to oblanceolate, entire, 1–2 cm. long, 4–6 mm.

[3] **Nemophila petrophila** n. sp., annua humilis 4–13 cm. alta; foliis cotyledonium oppositis, obovatis vel oblanceolatis, 1–2 cm. longis, 4–6 cm. latis, integris, infra glabris; foliis caulium ovatis, 1–2 cm. longis, pinnatis, lobis ovatis, integris, utrinque strigosis; floribus axillaribus; calyce fere ad basin diviso, lobis lineari-lanceolatis, 3–5 mm. longis, ciliatis; appendicibus in sinu 0.5–1.5 mm. longis; corolla fere 2 mm. longa.

broad, glabrous below, the petioles joined and sheathing the stem; cauline leaves opposite or rarely alternate, ovate in outline, 1–2 cm. long, 3–5-pinnate, the lobes ovate, entire, sparingly strigose on both surfaces; flowers usually one from the axils of the upper leaves; calyx 3 mm. long in flower, about 5 mm. long in fruit, divided almost to the base, the lobes linear-lanceolate, long-ciliate, otherwise glabrous or nearly so; reflexed appendages in the sinuses of the calyx lobes 0.5–1.5 mm. long, ciliate; corolla campanulate or apparently tubular, about 2 mm. long, shorter than the calyx-lobes, destitute of any appendages within, lobes ovate, about half of the length of the corolla; stamens attached near the base of the corolla by very slender filaments, barely reaching the orifice of the corolla; style 0.5–0.75 mm. long, enlarged and lobed at the apex but not divided; ovules two on each fleshy placenta, only one maturing; mature capsule round, 3–4 mm. in diameter, sparingly pubescent; seed round, 2.5–3 mm. in diameter, roughened or scarred at the apex, otherwise smooth, dull brick-red, solitary, filling the capsule.

WYOMING: rocky flats under *Pinus contorta,* Double Diamond Ranch, Grand Teton National Park, June 3, 1935, *Williams 2172,* TYPE; rocky open flats near Sensenbach's ranch, Grand Teton National Park, June 8, 1933, *Williams 1094*; Jackson's Hole, on Snake River, June 12, 1860, *Hayden;* marly soil, Jackson's Hole, June 14, 1860, *Hayden;* gravelly soil, Jackson's Hole, June 12, 1860, *Hayden;* rich marly hills, Jackson's Hole, in the valley of the Snake River, *Hayden.* All specimens cited in Herb. Mo. Bot. Gard.

This species seems to have its nearest allies in *N. parviflora* Dougl. and the closely related entities of that species as treated by Brand in 'Pflanzenreich,' Heft 59, IV. 251, pp. 54–55. 1913. It is quite common on the sagebrush flats in the region cited. The other species of the genus, *N. breviflora* Gray, which occurs in the mountains and in the same region as *N. petrophila* but along the moist swales and creek banks in the shade is quite distinct. Specimens of the proposed species were first collected by Hayden 76 years ago, but it seems not to have been found again until recently.

**Penstemon aridus** Rydb., Mem. N. Y. Bot. Gard. **1**: 348. 1900.

Apparently the first known collections of this species for Wyoming were made by the author during the summer of 1935. Dr. F. W. Pennell, in his treatment of the genus (Contr. U. S. Nat. Herb. **20**: 313–381. 1920), which covers Wyoming, did not include it. Rydberg in 'Fl. Ry. Mts. and Adj. Plains' gives the range as "Montana." The plant is quite abundant in the Big Horn Mountains. The two following collections are to be referred here: dry hillsides, lower Ten Sleep Canyon, Washakie Co., July 3, 1935, *Williams 2321;* dry western slopes of the Big Horn Mountains, ten miles east of Kane, Big Horn Co., July 5, 1935, *Williams 2348.*

**Penstemon Caryi** Pennell, Contr. U. S. Nat. Herb. **20**: 354. 1920.

Excellent specimens of this rare species were secured in the Big Horn Mountains, where the type was collected. Dry western slopes of the Big Horn Mountains, ten miles east of Kane, Big Horn Co., July 5, 1935, *Williams 2349.*

**Pedicularis cystopteridifolia** Rydb., Mem. N. Y. Bot. Gard. **1**: 365. 1900.

This rare and seldom collected species was found to be quite abundant in the Big Horn Mountains of Wyoming at elevations of 8000 feet and above, along the road between Dayton and Kane. In the field it shows a striking contrast to its near allies, *P. scopulorum* Gray, and *P. Hallii* Rydb. Number 2355 of my collections represents it.

**Downingia brachyantha** (Rydb.) Nels. & Macbr., Bot. Gaz. **55**: 382. 1913.

Moist clay ditch banks, Evanston, Uinta Co., Wyoming, June 21, 1934, *Harrison & Larsen 7933.* This seems to represent the first reported collection of this genus for Wyoming.

**Microseris nigrescens** Henderson, Bull. Torr. Bot. Club **27**: 348. 1900.

Dr. S. F. Blake, who has kindly determined my Compositae (except Senecio) collected during the past summer, informs me that this has been rarely collected. It is not uncommon in

moist meadows in the Big Horn Mountains and is represented by my number 2339, collected in moist meadows near Powder River Pass, Johnson Co., elev. 9000 ft., July 4, 1935.

**Senecio Harbourii** Rydb., Bull. Torr. Bot. Club **33**: 158. 1906.

Dry western slopes of the Big Horn Mountains, 10–15 miles east of Kane, Big Horn County, elev. 8000 ft., July 5, 1935, *Williams 2351.*

Dr. J. M. Greenman, who has kindly determined my Senecios, tells me that this seems to be the first recognized collection of this species in Wyoming. It extends the range of the species some 300 miles northward.

**Senecio spartioides** Torr. & Gray, var. **Fremontii** (Torr. & Gray) Greenman, comb. nov.

*Senecio filifolius* Nutt. β *Fremontii* Torr. & Gray, Fl. N. Am. **2**: 444. 1843.

Sandy hills near Hat Creek, Niobrara Co., Wyoming, *Williams s.n.*

This interesting variety of *S. spartioides,* although previously collected in Wyoming, seems not to have been reported hitherto for the state.

Specimens of all collections mentioned in this paper are to be found in the Herbarium of the Missouri Botanical Garden unless otherwise noted. Sets of my own collections have been or will be distributed to several American and European herbaria.